FINAL COMPREHENSIVE REPORT

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“Single Home Visits to Improve Health Outcomes”

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I. Introduction

A. Nature of the research problem

Because adherence to postnatal care guidelines across the United States (U.S.) is poor, newborns and mothers often are placed at undue risk for adverse medical and social outcomes.

B. Purpose, scope, and methods of the investigation

We sought to compare traditional office-based care (OBC) with a care model using a home nursing visit (HNV) as the initial post-discharge encounter for “well” breastfeeding newborns and mothers.

After delivery, 1154 mothers intending to breastfeed and their 1169 newborns ≥34 weeks gestation were randomly assigned to the HNV or OBC group. HNVs were scheduled ≤2 days post-discharge; OBC timing was physician-determined. Mothers completed telephone surveys at 2 weeks, 2 months, and 6 months. The primary outcome was unplanned healthcare utilization for mothers and newborns within 2 weeks of delivery. Other newborn outcomes were proportion seen ≤2 days post-discharge and breastfeeding duration. Maternal mental health, parenting competence, and satisfaction with care outcomes were assessed. Analyses followed an intent-to-treat paradigm.

C. Nature of the findings

The study results showed that at 2 weeks, hospital readmissions and Emergency Department (ED) visits were uncommon for mothers and newborns, and there were no study group differences in these outcomes or with unplanned outpatient visit frequency. HNV newborns were seen ≤2 days post-discharge more commonly (85.9% vs. 78.8%; \( p = .002 \)), and were more likely to be breastfeeding at 2 weeks (92.3% vs. 88.6%; \( p = .04 \)) and 2 months (72.1% vs. 66.4%; \( p = .05 \)), but not 6 months. No group differences were detected for maternal mental health or satisfaction with care, but HNV group mothers had greater parenting sense of competence \(( p < .01 \) at 2 weeks and 2 months).

We concluded that HNVs are a safe alternative to OBC for the initial outpatient encounter after maternity/nursery discharge with similar patterns of unplanned healthcare utilization and modest breastfeeding and parenting benefits.

II. Review of the Literature

With over 4 million deliveries annually, childbirth is among the most common causes of hospitalization in the United States (US).\(^1\) While medical and social issues for today’s term newborns and mothers are similar compared with those a generation ago, the maternity and newborn hospitalizations are much different. A simple example of this is shorter lengths of stay (LOS): in 1970, the mean postpartum stay following vaginal and Cesarean deliveries were 3.9 and 7.8 days, respectively;\(^2\) maternity stays now average 2.2 days after a vaginal delivery and 3.6 days after a Cesarean section.\(^1\)

Short stays less than 48 hours following delivery are viewed cautiously by newborn care providers because of the potential failure to recognize conditions requiring intervention such as jaundice, dehydration, cardiac lesions, and major infections.\(^3\)\(^-\)\(^7\) Numerous maternal morbidities also occur in the immediate postpartum period.\(^8\)\(^-\)\(^13\) Recognizing the possible morbidities associated with short stays as well as the desire to support new families and breastfeeding, the American Academy of Pediatrics (AAP) has published guidelines related to newborn care, hyperbilirubinemia, and breastfeeding, which all have emphasized that timely follow-up should typically occur within two days of newborn discharge.\(^14\)\(^-\)\(^21\)

However, since passage of the Newborns’ and Mothers’ Health Protection Act (NMHPA) by the US Congress in 1996,\(^22\) data have emerged suggesting that post-discharge care actually may have worsened for newborns in recent years.\(^23\)\(^-\)\(^27\) Follow-up may be less timely, putting newborns at unnecessary risk for morbidity. Additionally, the Health Employer Data and
Information Set has demonstrated that women’s attendance at postpartum follow-up appointments is suboptimal; 80% of women with private insurance and only 55% insured by Medicaid have a postpartum visit. While adherence to practice guidelines could diminish morbidity, solutions to achieve this goal must be practical, cost-effective, and capable of overcoming traditional barriers. We previously demonstrated that home nursing visits (HNV) were cost-effective for the prevention of newborn readmissions and emergency department (ED) visits for jaundice and dehydration when examined retrospectively. In this prospective trial, we sought to compare the typical office-based care (OBC) model of postnatal/postpartum healthcare with a model using a HNV as the initial post-discharge encounter for “well” breastfeeding newborns and mothers. This study is the first to compare these models following both vaginal and Cesarean deliveries using a community-based, private home health agency with maternal-child health visiting nurses. We hypothesized that well-timed HNVs would reduce unplanned healthcare utilization, improve adherence to follow-up guidelines, improve breastfeeding rates, and reduce adverse mental health outcomes, while improving parenting sense of competence and satisfaction with care.

III. Study Design and Methods

A. Participants

Mother-newborn dyads with deliveries at the Penn State Milton S. Hershey Medical Center (Hershey, PA) between September 12, 2006 and August 1, 2009 were screened for participation in the Nurses for Infants Through Teaching and Assessment after the NurserY (NITTANY) study. Eligible newborns were singletons and twins born at ≥34 weeks gestational age to English-speaking mothers attempting to breastfeed during the maternity stay and with intent to continue breastfeeding after discharge. Dyads were excluded for atypical stays characterized by a 1) >2 night stay after a vaginal delivery, 2) >4 night stay after a Cesarean section, 3) hospital course with atypical complications (e.g. ambiguous genitalia, endometritis), or 4) newborn hyperbilirubinemia requiring phototherapy during the nursery stay. Mothers were also excluded for major morbidities and/or pre-existing conditions that would affect postpartum care, lack of a telephone number, previous study participation, residence outside the coverage region of the Visiting Nurse Association of Central Pennsylvania (VNA), or if a HNV was specifically requested by a hospital social worker or child protective services due to social concerns.

B. Study Design and Data Collection

Participating mothers and their newborns were randomized to either the OBC or HNV groups after informed consent was obtained. The computer-generated randomization sequence included stratification for delivery type (vaginal, forceps/vacuum assisted vaginal, Cesarean section). During the maternity/nursery hospitalization, maternal interviews and hospital chart abstractions were conducted for baseline data collection using materials adapted from the Birth and Beyond Experience study. Following recommendations of two AAP policy statements at the time the trial began, HNVs were scheduled to occur within 48 hours of discharge, typically 3-5 days after childbirth. All HNV were conducted by one of seven VNA-employed Maternal Child Health nurses who had a mean of 21.4 ± 9.1 years of experience. To supplement their baseline knowledge, all nurses received continuing education related to breastfeeding support and cultural competency prior to study initiation. Before hospital discharge, an office visit was also scheduled for HNV newborns approximately one week following the HNV in order to establish a medical home for the newborn and to ensure recovery from expected, initial weight loss after birth. Depending on individual circumstances (e.g. day of week, gestational age, early discharge), these visits were scheduled to occur 5-14 days after birth. Post-discharge visit timing for OBC newborns was determined by the newborn nursery physician, and maternal office follow-up was scheduled by
the obstetricians for both study groups. Telephone interviews with mothers were then conducted by study coordinators blinded to study group 2 weeks, 2 months, and 6 months after childbirth.

C. Outcome Measures

The primary study outcome was maternal and infant use of unplanned healthcare services (inpatient, ED, urgent/acute care, primary care, mental health) in the 14 days after delivery. Fourteen days was chosen as the end-point for the primary analysis for three reasons. First, neonatal jaundice and dehydration typically occur shortly after hospital discharge and are the two most common and potentially preventable causes of newborn hospital readmission.4, 5, 16, 32-43 Second, maternal postpartum morbidities are also most likely to occur within 2 weeks of childbirth.9-12 Third, the benefits of a single HNV occurring shortly after discharge was hypothesized to have greater short-term benefits. Healthcare utilization in the first 60 days after delivery also was assessed as a secondary outcome.

Participant healthcare utilization was primarily assessed via maternal self-report using survey questions designed for this study. Though maternal report has been shown to be a reliable indicator of actual healthcare utilization,44 a subset of 144 mother/infant dyads that received all care at the birth hospital and affiliated clinics had their reported utilization compared with electronic medical record documentation of these visits. Compared with electronic records, mothers had excellent recall of their own healthcare utilization in the first 2 postpartum weeks (κ=0.79), but only moderate recall for the period spanning 2 weeks to 2 months postpartum (κ=0.46). Maternal recall of infant healthcare was excellent at 2 weeks (κ=0.85), but moderate for the period between 2 weeks and 2 months (κ=0.59).

Secondary outcomes included: breastfeeding duration and exclusivity, measured using questions adapted from the Infant Feeding Practices Study II Neonatal Questionnaire and Infant Month 2 Questionnaire;45 maternal postpartum depression, measured using the validated Edinburgh Postnatal Depression Survey (EPDS);46 state anxiety, measured using the State-Trait Anxiety Survey (STAI);47 perceived social support, measured using the MOS Social Support Survey (MOS-SSS);48 and parenting sense of competence, measured using the Parenting Sense of Competence (PSOC) scale.49 Secondary outcomes were assessed at baseline, 2 weeks, 2 months, and 6 months, though assessments for some scales were not done at every telephone interview to reduce participant burden.

One final secondary outcome was maternal satisfaction with care. The Satisfaction with Maternal and Newborn Care (SMNC) scale was developed for this project because no existing measure captured satisfaction with both maternal and newborn health care in the weeks following childbirth.

D. Sample size calculation and statistical analyses

Based on the data from previous studies,31, 54 we estimated that 1154 mother-newborn dyads (577 per arm) were required to demonstrate a reduction in the need for unplanned healthcare service utilization from 50% in the OBC arm to 40% in the HNV group with 90% statistical power and with α=.05. Included in this calculation was the assumption that physician discretion would lead to rare crossover of study group assignment with a combined crossover and dropout rate of 10%.

All statistical analyses invoked the intent-to-treat paradigm. The primary analysis of home visitation and unplanned healthcare utilization in the first 14 days after delivery was based on the Mantel-Haenszel test to account for randomization stratification by delivery type. Secondary outcomes of survey scales at 2 weeks, 2 months, and 6 months were analyzed using analysis of covariance (ANCOVA) models that included two predictors: randomized group and baseline score (where available). Breastfeeding duration was analyzed using Kaplan-Meier methods and logrank tests.55 Relevant covariates (e.g. parity) were assessed for interactions with randomized group assignment for study outcomes, but no statistically significant interactions were found.
IV. Detailed Findings

Demographic and Baseline Variables

1154 mothers intending to breastfeed during the maternity stay participated in the trial, of whom 576 (49.9%) were randomized to receive a HNV after discharge. The mean maternal age was 29.0 ± 5.5 years, and the majority of women were married, privately insured, and non-Hispanic, White with no differences between study groups. Nearly 50% were primiparous, and most reported that prenatal care was initiated in the first trimester. At baseline, there was no difference between groups for breastfeeding experience, depression, anxiety, perceived social support, or inpatient satisfaction with care. 738 participating women (64.0%) had unassisted vaginal deliveries, while 56 (4.9%) and 361 (31.3%) had assisted vaginal and Cesarean deliveries, respectively, with balanced numbers between groups due to the stratified randomization design.

With 15 (1.3%) twin deliveries, 1169 newborns participated in the trial with a mean gestational age of 39.2 ± 1.2 weeks and a mean birthweight of 3.422 ± 0.485 kg. 554 (47.7%) of the newborns were female, and 938 (80.5%) were described by their mothers as non-Hispanic, White. No significant differences existed for any of these variables between study groups.

The median newborn LOS was 49 hours (interquartile range 40-63 hours) and 77.4% of mothers planned to exclusively breastfeed after discharge with no significant differences between study groups.

Healthcare Utilization after Discharge

Two week outcomes: Two weeks after delivery, 1065 of the 1154 participating mothers (92.3%) completed the follow-up phone interview, which also collected data on 1080 of the 1169 newborns (92.4%). Attrition was similar between groups.

For the primary outcome, an unplanned outpatient visit was reported for 217 HNV newborns (39.8%) and 222 OBC newborns (41.5%) (OR: 0.93 [95% CI: 0.73-1.19]; p=.59). An unplanned outpatient visit occurred for 54 HNV mothers (10.0%) and 50 OBC mothers (9.5%) (OR: 1.06 [95% CI: 0.70-1.59]; p=.79). Hospital readmissions and ED visits were uncommon for newborns and mothers, with no significant differences between groups (Table 1).

For total (unplanned and planned) outpatient visits (office and HNV), 88.4% of HNV newborns had ≥2 visits versus 69.2% of OBC newborns (p<.001). While HNV newborns had more visits, the first visit was more likely to be adherent to the 2004 AAP guidelines15; 85.9% of HNV newborns were seen ≤2 days after discharge compared with 78.8% of OBC newborns (OR:1.63 [95% CI: 1.19-2.25]; p=.002). Total outpatient and lactation visits for mothers demonstrated no significant differences between groups.

Table 1. Infant & Maternal Healthcare Utilization 2 Weeks & 2 Months after Childbirth by Group

<table>
<thead>
<tr>
<th>Newborn Outcomes</th>
<th>Two Weeks</th>
<th></th>
<th>Two Months</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OBC</td>
<td>HNV</td>
<td>OR* (95% CI)</td>
<td>p</td>
<td>OBC</td>
<td>HNV</td>
</tr>
<tr>
<td>Hospital Readmission, N (%)</td>
<td>7 (1.3)</td>
<td>8 (1.5)</td>
<td>1.13 (0.41-3.14)</td>
<td>.82</td>
<td>16 (3.2)</td>
<td>16 (3.1)</td>
</tr>
<tr>
<td>ED Visit, N (%)</td>
<td>8 (1.5)</td>
<td>13 (2.4)</td>
<td>1.60 (0.66-3.90)</td>
<td>.29</td>
<td>35 (7.0)</td>
<td>33 (6.4)</td>
</tr>
<tr>
<td>Unplanned Outpatient Visit, N (%)</td>
<td>222 (41.5)</td>
<td>217 (39.8)</td>
<td>0.93 (0.73-1.19)</td>
<td>.59</td>
<td>287 (57.8)</td>
<td>292 (56.6)</td>
</tr>
<tr>
<td>Total, N (%)</td>
<td>227 (42.4)</td>
<td>224 (41.1)</td>
<td>0.95 (0.74-1.21)</td>
<td>.87</td>
<td>302 (60.8)</td>
<td>298 (57.8)</td>
</tr>
<tr>
<td>Maternal Outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N=535</td>
<td>N=545</td>
<td>N=497</td>
<td>N=516</td>
<td>N=491</td>
<td>N=509</td>
</tr>
<tr>
<td>Hospital Readmission, N (%)</td>
<td>4 (0.8)</td>
<td>7 (1.3)</td>
<td>1.72 (0.50-5.93)</td>
<td>.38</td>
<td>7 (1.4)</td>
<td>13 (2.6)</td>
</tr>
<tr>
<td>ED Visit, N (%)</td>
<td>20 (3.8)</td>
<td>28 (5.2)</td>
<td>1.38 (0.76-2.48)</td>
<td>.29</td>
<td>30 (6.1)</td>
<td>41 (8.1)</td>
</tr>
<tr>
<td>Unplanned Outpatient Visit, N (%)</td>
<td>50 (9.5)</td>
<td>54 (10.0)</td>
<td>1.06 (0.70-1.59)</td>
<td>.79</td>
<td>97 (19.8)</td>
<td>118 (23.2)</td>
</tr>
<tr>
<td>Total, N (%)</td>
<td>64 (12.1)</td>
<td>76 (14.1)</td>
<td>1.18 (0.83-1.69)</td>
<td>.36</td>
<td>113 (23.0)</td>
<td>142 (27.9)</td>
</tr>
</tbody>
</table>

* Mantel-Haenszel Odds Ratios (OR) stratified by delivery for HNV with OBC as the reference value
Two month outcomes: 1000 mothers (86.7%) completed the second phone interview, which also collected data on 1013 newborns (86.7%). Unplanned healthcare utilization was not significantly different between groups (Table 1) though HNV infants were more likely than OBC infants to have ≥3 total outpatient visits in the first 60 days after birth (71.9% vs. 62.0%; p<.001). As most mothers do not have a scheduled visit until the second postpartum month, the proportion with at least one outpatient visit within the first two months was compared and no differences existed between groups.

Breastfeeding Duration Outcomes

At baseline, there was no difference in intended duration between study groups. While there were no overall differences over the 6 month follow-up period in breastfeeding duration between groups (logrank p=.29; Figure 1), individual estimates at survey assessment points revealed more HNV newborns were breastfeeding at 2 weeks than their OBC counterparts (92.3% vs. 88.6%; p=0.04) and at 2 months (72.1% vs. 66.4%; p=0.05), but not 6 months (49.8% vs. 48.9%; p=0.80). Notably, a logrank test applied to the first two months of breastfeeding duration data demonstrated a significant difference between groups (p=.03). Further, because the effect of a single home visit would be expected to have a bigger impact on breastfeeding proximal to the visit and because the greater time span that existed between the 2 and 6 month surveys reduced the precision that women reported their breastfeeding duration (e.g. more women reported stopping at round numbers of months rather than days or weeks), a weighted logrank test (ρ=3) showed significant differences in breastfeeding duration between group (p=.03).

Figure 1. Kaplan-Meier plot of infant breastfeeding duration by randomized study group

*Overall Kaplan-Meier logrank p=0.29. Individual estimates at survey assessment points (HNV vs. OBC): 2 weeks (92.3% vs. 88.6%; p=.04), 2 months (72.1% vs. 66.4%; p=.05), 6 months (49.8% vs. 48.9%; p=.80)
Maternal Mental Health, Social Support, Parenting Competence, and Satisfaction with Care

EPDS scores revealed that the odds of screening tests indicative of postpartum depression (score ≥12) were similar for HNV compared with OBC at every assessment point, after adjustment for baseline values. Mean EPDS scores between groups were similar (Table 2). Additionally, scores for state anxiety, perceived social support, and satisfaction with newborn and maternal care after discharge were not significantly different between groups at any assessment point after adjustment for baseline survey values. Significant differences were detected, however, on the Parenting Sense of Competence scale at 2 weeks (p=0.007) and 2 months (p=0.009) with a marginal difference at 6 months (p=0.08) all demonstrating more favorable scores for HNV mothers.

Table 2. Depression, Anxiety, Social Support, Parenting Competence, & Satisfaction with Care

<table>
<thead>
<tr>
<th>Measurement Survey</th>
<th>OBC N</th>
<th>HNV N</th>
<th>Mean Difference Between Groups (SE) at Postpartum Assessments (HNV – OBC)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edinburgh Postnatal Depression Survey (EPDS) Score*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 2 weeks</td>
<td>527</td>
<td>538</td>
<td>.06 (.19)</td>
<td>.75</td>
</tr>
<tr>
<td>- 2 months</td>
<td>491</td>
<td>515</td>
<td>-.07 (.19)</td>
<td>.70</td>
</tr>
<tr>
<td>- 6 months</td>
<td>453</td>
<td>491</td>
<td>-.24 (.19)</td>
<td>.21</td>
</tr>
<tr>
<td>State Anxiety Index (STAI) Score*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 2 weeks</td>
<td>529</td>
<td>539</td>
<td>-.29 (.41)</td>
<td>.47</td>
</tr>
<tr>
<td>- 2 months</td>
<td>493</td>
<td>511</td>
<td>.51 (.44)</td>
<td>.25</td>
</tr>
<tr>
<td>- 6 months</td>
<td>458</td>
<td>494</td>
<td>-.26 (.50)</td>
<td>.61</td>
</tr>
<tr>
<td>Transformed* MOS Social Support (MOS-SSS) Score*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 2 weeks</td>
<td>526</td>
<td>535</td>
<td>.41 (.55)</td>
<td>.46</td>
</tr>
<tr>
<td>- 6 months</td>
<td>453</td>
<td>491</td>
<td>-1.05 (.71)</td>
<td>.14</td>
</tr>
<tr>
<td>Satisfaction with Maternal &amp; Newborn Care (SMNC) Score*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 2 weeks</td>
<td>527</td>
<td>535</td>
<td>.39 (.43)</td>
<td>.36</td>
</tr>
<tr>
<td>- 2 months</td>
<td>484</td>
<td>509</td>
<td>.25 (.45)</td>
<td>.58</td>
</tr>
<tr>
<td>Parenting Sense of Competence (PSOC) Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 2 weeks</td>
<td>528</td>
<td>538</td>
<td>1.43 (.52)</td>
<td>.007</td>
</tr>
<tr>
<td>- 2 months</td>
<td>481</td>
<td>501</td>
<td>1.44 (.55)</td>
<td>.009</td>
</tr>
<tr>
<td>- 6 months</td>
<td>449</td>
<td>480</td>
<td>.93 (.54)</td>
<td>.08</td>
</tr>
</tbody>
</table>

For EDPS and STAI, higher scores suggest worse outcome whereas for MOS-SSS, SMNC, and PSOC higher scores suggest a more positive outcome

*Mean differences estimated from ANCOVA models that adjusted for baseline score

$Scores converted to 0-100 scale

V. Discussion and Interpretation of Findings

A. Conclusions to be drawn from findings (with reference to data supporting each).

The results of this study suggest that HNVs are a safe and effective alternative to OBC for the initial outpatient encounter for newborns and mothers after hospital discharge with some modest added benefits to visit timeliness, breastfeeding, and parenting sense of competence. Unplanned healthcare utilization was similar between groups, and while HNV newborns had more total outpatient visits, the initial visit was more likely to be timed according to guidelines for post-discharge care. With other recent studies demonstrating a lack of timeliness for or access to newborn outpatient follow-up, particularly for those insured by Medicaid, HNVs are an alternative that can bridge the gap between nursery care and primary care.

The benefits in our HNV group for breastfeeding are noteworthy. While the differences between groups are admittedly modest, generalizable post-hospital discharge interventions to improve breastfeeding continuation are few with those finding benefits centered around providing extra professional or lay support for breastfeeding. Further, while the absolute difference between groups was relatively small, from a population-based perspective the differences are potentially important. With US 2007 breastfeeding initiation rates at 75.0% and a Healthy People 2020 goal of 81.9%, the differences of breastfeeding continuation between groups we discovered among women intending to breastfeed at 2 weeks (92.3% vs. 88.6%) and
2 months (72.1% vs. 66.4%) seem meaningful and suggest HNV could be one potential intervention to help US women achieve Healthy People 2020 objectives for breastfeeding.

B. Explanation of study limitations
The results of this study are somewhat limited by the exclusively English-speaking population that included a relatively low percentage of minority and low-income participants from the single, academic center where the trial was conducted. Therefore, it is not clear whether these findings are generalizable to more diverse populations or to urban and non-academic settings. It could be argued, however, that in those settings where post-discharge follow-up is less optimal, the timely visit provided by HNVs could produce more positive effects than we found in the current study.

C. Comparison with findings of other studies
Our prospective study has similarities to those conducted by Lieu et al.\(^5^1\) and Escobar et al.\(^3^1\) who compared HNVs with outpatient clinic visits or hospital-based group visits on the 3\(^{rd}\) or 4\(^{th}\) day after delivery. Those studies did not find differences in healthcare utilization, breastfeeding rates, or maternal mental health outcomes, but differed from our study in that they were limited to privately insured mothers and infants born vaginally. Additionally, their visiting nurses did not have a specific Maternal Child health focus. Other studies have shown the safety of home-based follow-up after short maternity/nursery stays.\(^6^4\)-\(^7^1\) Consistent with our previous retrospective study,\(^3^0\) retrospective analyses of single HNVs have found benefits. Braveman et al. showed that acute care visits, rehospitalizations, and missed well-baby visits were less common among newborns that received a home nurse visit.\(^7^2\) Similarly, Cooper et al. found home visitation for infants discharged early resulted in earlier and more consistent follow-up at primary care offices with decreased ED utilization compared with a cohort that did not receive HNVs.\(^7^3\) Indeed, both the American Nurses Association (ANA) and World Health Organization have opined that HNVs should be the preferred form of postnatal follow-up.\(^7^4, 7^5\) In preferring the HNV model, the ANA wrote that OBC may be difficult for the healing mother, interrupts breastfeeding, and often does not allow ample time for health teaching and evaluation of family dynamics.

D. Possible application of findings to actual MCH health care delivery situations
This study demonstrated that HNVs are a safe and effective alternative to OBC for the initial outpatient encounter after maternity and nursery discharge. Especially for hospitals and communities where access to timely post-discharge care is problematic, HNVs should be considered as an option especially given the potential benefits for breastfeeding and parenting sense of competence.

E. Policy implications
Efforts should be made to mandate insurance coverage of postpartum/postnatal home visitation.

F. Suggestions for further research
Similar evaluations of HNVs in higher risk and urban settings would be an important next step.
VI. List of products  
A. Manuscripts published, submitted, or in progress


Bartok CJ, Schaefer EW, Beiler JS, Paul IM. Pre-pregnancy BMI and gestational weight gain patterns do not influence breastfeeding outcomes when confounding factors are considered. In progress.

Beiler JS, Schaefer EW, Alleman N, Paul IM. Newborn anticipatory guidance delivered at office based vs. home nurse visits. In progress.


Paul IM, Schaefer EW, Beiler JS, Alleman N, Maisels MJ. Transcutaneous bilirubin testing at newborn home nursing visits. In progress.

B. Abstracts presented at national/international scientific meetings


Bartok CJ, Schaefer EW, Beiler JS, Paul IM. Pre-pregnancy BMI and gestational weight gain patterns do not influence breastfeeding outcomes when confounding factors are considered. Poster presentation at the Pediatric Academic Societies Annual Meeting, Denver, CO, May 1, 2011.